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NEW UTILITY PATENT APPLICATION TRANSMITTAL


☐ DUPLICATE

Address to: Assistant Commissioner for Patents Box PATENT APPLICATION Washington, DC 20231	Attorney Docket No.	EM/HUNG/5050
	First Named Inventor (or Identifier)	Michael HUNG
	Total Pages	27

This submits a new application under 37 CFR 1.53(b).

Entitled:	OIL CIRCUIT OF A JACK FOR RISING OBJECT TO PRESET POSITION RAPIDLY
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- ☒ 1. Submitted herewith are the following:
- 11 pages of specification, including an Abstract,
 7 sheet(s) of drawings, and
 2 claim(s).
- ☒ 2. Submitted herewith is an Oath/Declaration signed by each inventor.
- ☒ 3. Submitted herewith are the following:
- ☐ signed Independent Inventor Small Entity Statement(s),
 ☒ 1 signed Small Business Small Entity Statement(s),
 ☐ signed Non-Profit Small Entity Statement(s),
 ☐ signed Non-Inventor Small Entity Statement(s).
- ☐ 4. A preliminary amendment is enclosed.
- ☐ 5. Submitted herewith is an Information Disclosure Statement, ___ pages of Form PTO-1449, and one copy of each document listed thereon.
- ☒ 6. An assignment of the invention to MVP (H.K.) INDUSTRIES LIMITED.
- ☐ 7. A certified copy of application no. _____ in _____.
- ☒ 8. The Commissioner is authorized to credit any over payment and charge any deficiency in any fees required under 37 CFR 1.16, 1.17 and/or 1.18, to Deposit Account No. 02-0200.
- ☒ 9. A check in the amount of \$ 420.00 is submitted herewith.
- ☐ 10. Other: _____

THE FILING FEE IS CALCULATED AS FOLLOWS:				Basic Fee	\$760.00
Total Claims:	2	- 20 =	0	X \$18 =	\$0.00
Independent Claims:	1	- 3 =	0	X \$78 =	\$0.00
Correspondence Address: BACON & THOMAS 625 Slaters Lane, 4th Floor Alexandria, VA 22314-1176				Multiple Dependent Claim (add \$260.00):	
				Subtotal	\$760.00
				50% Reduction if Small Entity Status:	\$380.00
Phone: 703-683-0500 Fax: 703-683-1080				Total:	\$380.00
Date:	Name:		Signature:		Reg. No.
October 8, 1999	Eugene Mar				25,893

VERIFIED STATEMENT (DECLARATION) BY A SMALL BUSINESS CLAIMING SMALL ENTITY STATUS UNDER 37 CFR 1.9(F) AND 1.27(c)

Applicant or Patentee: Michael HUNG

Docket #:

Serial or Patent Number:

Group Art Unit:

Filed or Issued:

Examiner:

Title: OIL CIRCUIT OF A JACK FOR RISING OBJECT TO PRESET POSITION RAPIDLY

I hereby declare that I am

- ☒ the owner of the small business concern identified below:
☐ an official of the small business concern empowered to act on behalf of the concern identified below:

Name of Concern: MVP (H.K.) INDUSTRIES LIMITED

Address: 15/F, Sup Tower, 75-83 King's Road, North Point, HONG KONG

I hereby declare that the above identified small business concern qualifies as a small business concern as defined in 13 CFR 121.3-18, and reproduced in 37 CFR 1.9(d), for purposes of paying reduced fees under section 41(a) and (b) of Title 35, United States Code, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both.

I hereby declare that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the matter described in:

- ☐ The specification filed herewith, with the title as listed above.
☐ The patent application identified above.
☐ The PCT International patent application identified above.
☐ The patent number identified above.

If the rights held by the above identified small business concern are not exclusive, each individual, concern or organization having rights to the invention must file separate verified statements averring to their status as small entities, and no rights to the invention are held by any person, other than the inventor, who would not qualify as an independent inventor under 37 CFR 1.9(c) if that person made the invention, or by any concern who would not qualify as a small business concern under 37 CFR 1.9(d), or a nonprofit organization under 37 CFR 1.9(e). Each person or organization having any rights in the invention is listed below:

- ☐ no such person, concern or organization.
☐ each such person, concern or organization listed below:


FULL NAME:	<input type="checkbox"/> Individual <input type="checkbox"/> Small Business Concern <input type="checkbox"/> NonProfit Organization
ADDRESS:	

FULL NAME:	<input type="checkbox"/> Individual <input type="checkbox"/> Small Business Concern <input type="checkbox"/> NonProfit Organization
ADDRESS:	

☐ See attached sheet for additional person(s) concern(s) or organization(s).

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate (37 CFR 1.28(b)).

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine, or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which the verified statement is directed.

Name and Title	Date
David HONG, president	Sep. 13, 1999
Address	Signature
15/F, Sup Tower, 75-83 King's Rd., North Point, HONG KONG	

OIL CIRCUIT OF A JACK FOR RISING OBJECT TO PRESET POSITION RAPIDLY

FIELD OF THE INVENTION

5 The present invention relates to an oil circuit of a jack for rising
an object to a preset position rapidly, which improve the device
disclosed in U. A. Patent No. 5,577,099 so that the piston rod can attain
a still state rapidly. The inner oil chamber of the piston rod is
communicated to inner oil reservoir so that the inner and outer oil
10 pressure of the oil tube are equal so that breakage is prevented.

BACKGROUND OF THE INVENTION

 In using a conventional hydraulic jack, despite of dummy load
or loading condition, the handle must move repeated many times
15 so as to drive the oil cylinder to work. However, since in dummy
load or light load, it still needs to be driven repeated, much work
is wasted. Therefore, the invention in U. S. Patent No. 5,755,099,
“Hydraulic Circuit System for One Touch Jack and Its Structure”,
discloses a jack structure, in which-the jack hydraulic loop circuit
20 includes an oil inlet circuit, an oil return circuit and an overload
protecting circuit.

 In the oil inlet circuit, the outer oil reservoir is communicated
to the pumping oil chamber through a check valve. The pumping
oil chamber is communicated to a oil guiding tube through another
25 check valve, The oil guiding tube is embedded into the inner oil

chamber in the piston rod for forming as a loop. The pumping oil chamber is communicated to the inner oil reservoir of the piston rod through a sequential valve B. The outer oil reservoir is communicated to the inner oil reservoir of the hydraulic cylinder through a check valve. When a manual pump is in dummy load or light load, the oil circuit provides hydraulic oil to the inner oil chamber of the piston rod from the pump and through the oil guiding tube.

In the oil return circuit, the inner oil reservoir is communicated to the inner oil chamber of the piston rod through a check valve, then it further passes through a release valve to be communicated to the outer oil reservoir. When oil is unloaded and then it desires to the original position, the release valve and be adjusted to a release position so that the oil return circuit is conducted.

In the overload circuit, an outer oil reservoir passes through a safety valve to be communicated to the oil chamber of a manual pump. When the pressure of the hydraulic cylinder is over a rated pressure, the safety valve will be conducted so that the overload protecting circuit will open automatically. In the aforesaid hydraulic loop system, the maximum effective oil storing amount of the pumping oil chamber of the manual pump is large than or equal to the maximum effective oil storing amount of the inner oil chamber in the piston rod so that the hydraulic jack may rapidly rise to a loading position in dummy or light load condition.

However, in above invention, for the check valves in the oil circuit and the oil channels, since when the piston rod move to a position in one touch, the oil guiding tube and the inner oil reservoir are in still condition. Thus, the inner and outer pressures
5 of the oil guiding tube in the piston rod are unequal, the oil guiding tube must suffer from a large still load pressure. Therefore, the pressure-resistance of the oil guiding tube must be further improved, but this will increase the cost. If the pressure-resistance of the oil guiding tube is insufficient, it is
10 possible to break out. Therefore, many considerations in safety are concerned for the prior art design.

SUMMARY OF THE INVENTION

15 Accordingly, the primary object of the present invention is to provide an oil circuit of a jack for rising an object to a preset position rapidly, wherein the oil inlet circuit of a hydraulic loop system is improved. An oil channel is installed between the inner oil chamber of the piston rod and the sequential valve. A check
20 valve is installed between the oil channel and the sequential valve. An oil channel is installed between the sequential valve and the check valve for being connected to the inner oil chamber of the piston rod. By changing the positions of the check valve and the oil channel. When in the working conditions of dump load or light
25 load, the sequential valve is closed, thus, the hydraulic oil may

enter into the inner oil chamber of the piston rod from the
pumping oil chamber through the check valve so that the piston
rod will rise rapidly to a still condition. In the still condition,
since the check valve closes the oil channel, the sequential valve
5 will open automatically so that the inner oil chamber of the piston
rod is communicated to the inner oil reservoir. Thus the inner and
outer oil pressures of the oil guiding tube in the piston rod are
equal. Thus, no strong still load hydraulic pressure exists in the
oil guiding tube within the inner oil chamber of the piston rod. BY
10 this changing, the still load hydraulic pressure of the inner oil
reservoir and the inner oil chamber of the piston rod can be
adjusted equilibrium by the sequential valve. Therefore, the
problem of breakage of the oil guiding tube of the piston rod and
the high cost due to confinement in material are solved. Moreover,
15 the sequential valve can be located outsides so that the sequential
valve is adjustable outsides to a preset actuating pressure.

Another object of the present invention is to provide an oil
circuit of a jack for rising an object to a preset position rapidly,
wherein the sequential valve is located outsides with a 90 degrees
20 of position shift, and a connecting oil channel is installed between
a ball vale and the inner oil reservoir so that the adjusting nut of
the sequential valve is locked to the outer wall of the rear seat of
a jack. The sequential valve B can be located outsides so that the
sequential valve is adjustable outsides to a preset actuating
25 pressure.

The various objects and advantages of the present invention will be more readily understood from the following detailed description when read in conjunction with the appended drawing.

5

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 illustrates a hydraulic circuit system according to the present invention.

Fig. 2 is a cross sectional view of the structure of a jack according to the present invention.

10 Fig. 3 illustrates displacement of the piston rod to its loading position in one step;

Fig. 4 illustrates further raising of the piston rod to support a load;

15 Fig. 5 illustrates displacement of raising arm and support plate by action of piston rod from a standstill position to a full raising position;

Fig. 6 is a sectional view of the sequence valve according to the present invention;

20 Fig. 7 is a schematic partial enlarged view of the embodiment shown in Fig. 6.

Fig. 8 is a schematic partial cross sectional view along A-A in Fig. 7.

***DETAILED DESCRIPTION OF THE PREFERRED
EMBODIMENTS***

5 With reference to Figs. 1 and 2, the oil circuit of a jack for
rising an object to a preset position rapidly of the present
invention include an oil inlet circuit, an oil return circuit and an
overload protecting circuit, and the inner oil reservoir 1, the outer
oil reservoir 2, the pumping oil chamber 3 and piston rod 4 of a
10 hydraulic cylinder 10.

 The oil inlet circuit is formed by the outer oil reservoir 2 of
the hydraulic cylinder 10 being connected to the pumping oil
chamber 3 through a check valve A1. The pumping oil chamber 3
is connected to the inner oil reservoir 1 of the hydraulic cylinder
15 10 through a sequential valve B. The outer oil reservoir 2 is
connected to the inner oil reservoir 1 of the hydraulic cylinder 10
through a check valve 3. An oil channel 31 is installed between the
inner oil chamber 41 of the piston rod 4 and the sequential valve
B. A check valve A2 is installed between the oil channel 31 and
20 the sequential valve B. A oil channel 311 is installed between the
sequential valve B and the check valve A2 for being connected to
the inner oil chamber 41 of the piston rod 41. By changing the
positions of the check valve A2 and the oil channel 31 and 311.
When in the working conditions of dump load or light load, the
25 sequential valve B is closed, thus, the hydraulic oil may enter into

the inner oil chamber 41 of the piston rod 4 from the pumping oil chamber 3 through the check valve A2 so that the piston rod 4 will rise rapidly to a still condition (as shown in Fig. 3). In the still load condition, since the check valve A2 closes the oil channel 31, the sequential valve B will open automatically so that the inner oil chamber 41 of the piston rod 4 is communicated to the inner oil reservoir 1. Thus the inner and outer oil pressures of the oil guiding tube 50 in the piston rod 4 are equal. Thus, no strong still load hydraulic pressure does not exist in the oil guiding tube 50 within the inner oil chamber 41 of the piston rod 4. BY this change, the still load hydraulic pressures of the inner oil reservoir 1 and the inner oil chamber 41 of the piston rod 4 can be adjusted equilibrium by the sequential valve B. Therefore, the problem of breakage of the oil guiding tube 50 of the piston rod 4 and the high cost due to confinement in material are solved.

In the oil return circuit, the inner oil reservoir 1 of the hydraulic cylinder 10 is connected to the inner oil chamber 41 of the piston rod 4 through a check valve 4, then it further passes through a release valve C to the outer oil reservoir 2. After unloading so as to be returned to the original position, the release valve C can be adjusted to a releasing condition, so that the oil return circuit is conducted.

In the overloading protecting circuit, the outer oil reservoir 2 of the hydraulic cylinder 10 passes through a safety valve D to be connected to the pumping oil chamber 3. When the pressure of the

hydraulic cylinder 10 is over a rated pressure, the safety valve will be conducted so that the overload protecting circuit will open automatically.

In the aforesaid hydraulic loop system, the maximum effective oil storing amount of the pumping oil chamber 3 is larger than or equal to the maximum effective oil storing amount of the inner oil chamber 41 in the piston rod so that the hydraulic jack may rapidly rise to a loading position in dummy or light load condition.

In the aforesaid operation, when the piston rod 4 moves forwards, since the pressure of the inner oil reservoir 1 of the hydraulic cylinder 10 reduces abruptly, the hydraulic oil will automatically enter into the inner oil reservoir 1 from the outer oil reservoir 2 through an oil channel D12. Moreover, some hydraulic oil may flow to the pumping oil chamber 3 along the oil channel D1 for waiting that the pump 21 process a hydraulic circulate work. Now, the hydraulic oil can not enter into the inner oil chamber 41 of a saturated piston rod 4. Therefore, a pressure sufficient to actuate the sequential valve B is attained, thus, the hydraulic oil will enter into the inner oil reservoir 4 from the oil channel 31 of the pumping oil chamber 3 through the sequential valve B so that the piston rod 4 ejects a heavy object W to be raised slowly in a lower speed to a preset ejecting position or to a whole rising state (as shown in Fig. 4). The pressure of the sequential valve B may be set in the preset value for actuating.

As shown in Fig. 5, the arm 30 of the jack and the top disk 40 are raised quickly to a preset position to contact with a heavy object W from a still load condition along with the displacement of the piston rod 4 so as to rise the object W.

5 According to aforesaid embodiment, the actuating pressure of the sequential valve B can be set in advance according to the practical requirement, and the sequential valve B can be directly arranged within the rear seat 60 of the jack for forming as a hiding type. However, similarly, the sequential valve B' can be located
10 outsides, as the embodiment shown in Figs. 6 and 7. The sequential valve B' can be located in a position with a 90 degrees shifting, while the check valves A2, A3 and A4 and oil channel 311 connected the sequential valve B' and the common oil channel 31 are remained unchanged. However, in this condition, a
15 connecting oil channel 11 (as shown in Fig. 8) is required to be installed between the valve ball b1' and the inner oil reservoir 1. Thus, the adjustable nut B2' of the sequential valve B' is locked to the outer wall of the rear seat 60 of the jack. The aforesaid sequential valve B' can be located outsides for adjusting the
20 pressure setting of the sequential valve B' conveniently. Therefore, the user may set the pressure easily to suit different requirements in actuation. As a consequence, all the modifications of the sequential valve B is within the scope and spirit of the present invention.

25 Although the present invention has been described with

reference to the preferred embodiments, it will be understood that the invention is not limited to the details described thereof. Various substitutions and modifications have been suggested in the foregoing description, and others will occur to those of
5 ordinary skill in the art. Therefore, all such substitutions and modifications are intended to be embraced within the scope of the invention as defined in the appended claims.

What is claimed is:

1. An oil circuit of a jack for rising an object to a preset position rapidly comprising an oil inlet circuit, an oil return circuit, and an overload protecting circuit, and the inner oil reservoir 1, outer oil reservoir 2, pumping oil chamber 3 and piston rod 4 of a hydraulic cylinder 10, wherein
5
in the oil inlet circuit, the outer oil reservoir 2 of the hydraulic cylinder 10 is communicated to the pumping oil chamber 3 through a check valve A1, the pumping oil chamber 3 passes through a sequential valve B to be communicated to the inner oil reservoir 1 of the hydraulic cylinder 10, and the outer oil reservoir 2 is communicated to the inner oil reservoir 1 of the hydraulic cylinder 10 through a check valve A3;
10
in the oil return circuit, the inner oil reservoir 1 of the hydraulic cylinder 10 is communicated to the inner oil chamber 41 of the piston rod 4 through a check valve A4, then it further passes through a release valve C to be communicated to an outer oil reservoir 2; when a load is loaded and then the jack returns to the original position, the release valve C can be adjusted to a release position so that the oil
15
return circuit is opened; and
20
in the overload protecting circuit, the outer oil reservoir 2 of the hydraulic cylinder 10 passes through a safety valve D to be communicated to the pumping oil chamber 3; when the pressure of the hydraulic cylinder 10 is over a rated pressure, the safety valve D will
25
be conducted so that the overload protecting circuit is actuated;

wherein

in the aforesaid hydraulic loop system, the maximum effective oil storing amount of the pumping oil chamber is large than or equal to the maximum effective oil storing amount of the inner oil chamber in the piston rod;

a common oil channel 31 is installed between the pumping oil chamber 3, the inner oil chamber 41 of the piston rod 4 and the sequential valve B, a check valve A2 is installed between the oil channel 31 and the sequential valve B, an oil channel 311 is installed between the sequential valve B and the check valve A2 for being connected to the inner oil chamber 41 of the piston rod 4; when in the working conditions of dump load or light load, the sequential valve B is closed, thus, the hydraulic oil enter into the inner oil chamber 41 of the piston rod 4 from the pumping oil chamber 3 through the check valve A2 so that the piston rod 4 will rise rapidly to a still condition; in the still load condition, since the check valve A2 closes the oil channel 31, the sequential valve B will open automatically so that the inner oil chamber 41 of the piston rod 4 is communicated to the inner oil reservoir 1; thus the inner and outer oil pressures of the oil guiding tube 50 in the piston rod 4 are equal.

2. The oil circuit of a jack for rising an object to a preset position rapidly as claimed in claim 1, wherein the sequential valve B is located outsides with a 90 degrees of position shift, and a connecting oil channel 11 is installed between a ball vale B1 and the inner oil reservoir 1 so that the adjusting nut of the sequential valve B is locked

ABSTRACT

An oil circuit of a jack for rising an object to a preset position rapidly, wherein the oil inlet circuit of a hydraulic loop system is improved. An oil channel is installed between the inner oil chamber of the piston rod and the sequential valve. A check valve is installed between the oil channel and the sequential valve. An oil channel is installed between the sequential valve and the check valve for being connected to the inner oil chamber of the piston rod. By changing the positions of the check valve and the oil channel. When in the working conditions of dump load or light load, the sequential valve is closed, thus, the hydraulic oil may enter into the inner oil chamber of the piston rod from the pumping oil chamber through the check valve so that the piston rod will rise rapidly to a still condition. In the still condition, since the check valve closes the oil channel, the sequential valve will open automatically so that the inner oil chamber of the piston rod is communicated to the inner oil reservoir. Thus the inner and outer oil pressures of the oil guiding tube in the piston rod are equal. Thus, no strong still load hydraulic pressure exists in the oil guiding tube within the inner oil chamber of the piston rod. BY this changing, the still load hydraulic pressure of the inner oil reservoir and the inner oil chamber of the piston rod can be adjusted equilibrium by the sequential valve. Therefore, the problem of breakage of the oil guiding tube of the piston rod and the high cost due to confinement in material are solved. Moreover, the sequential valve can be located outside so that the sequential valve is adjustable at outside to a preset actuating pressure.

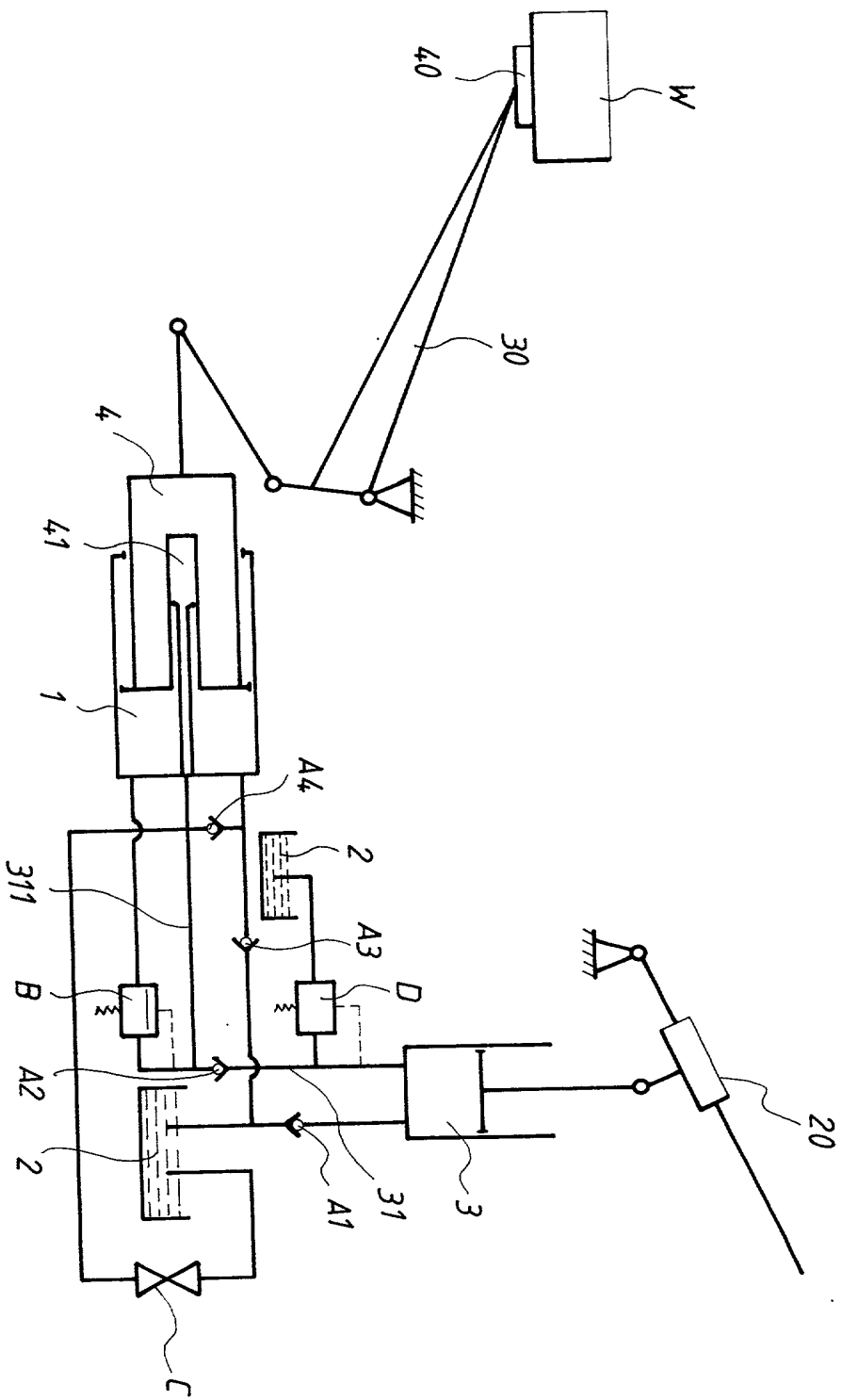


FIG. 1

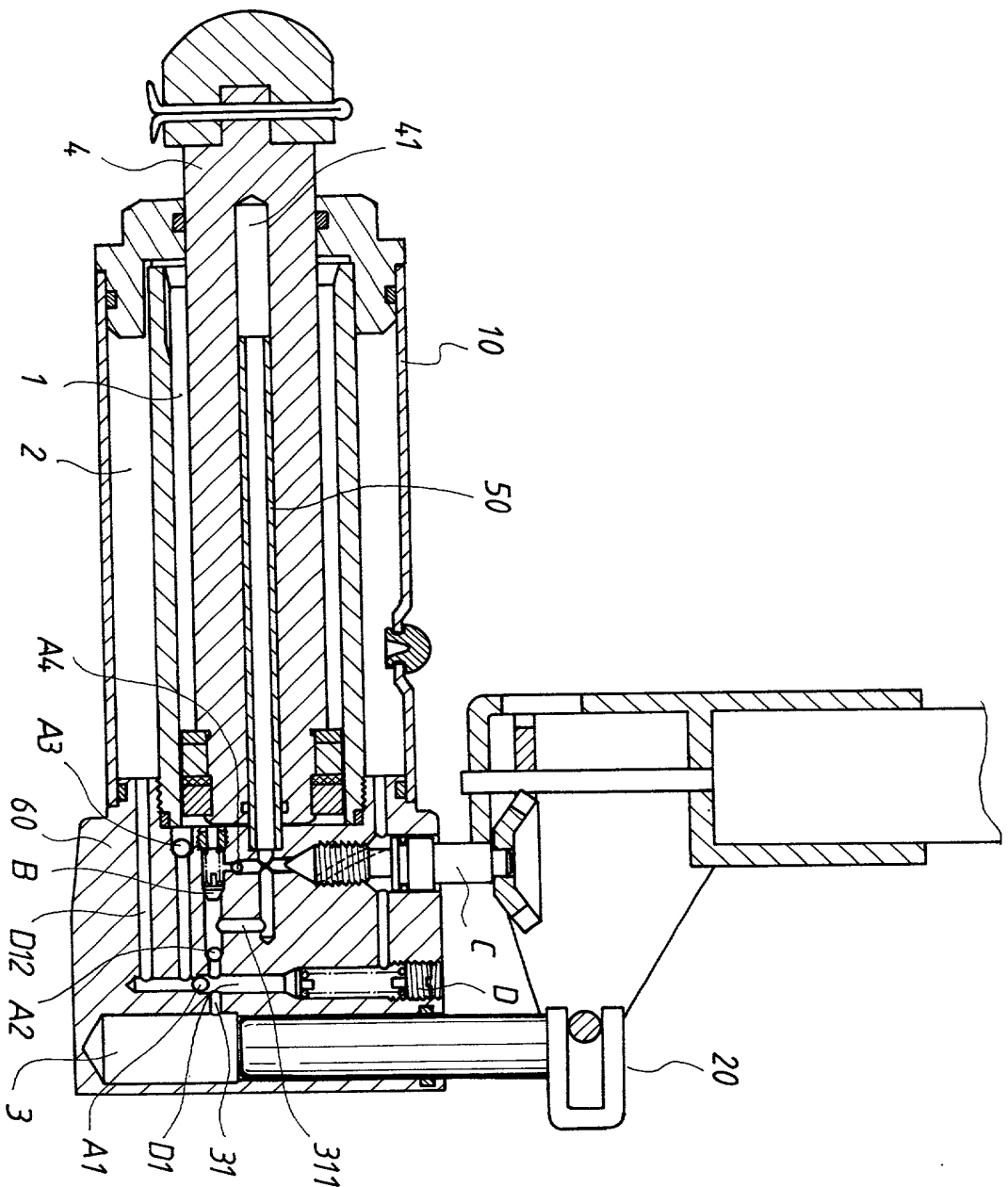


FIG. 2

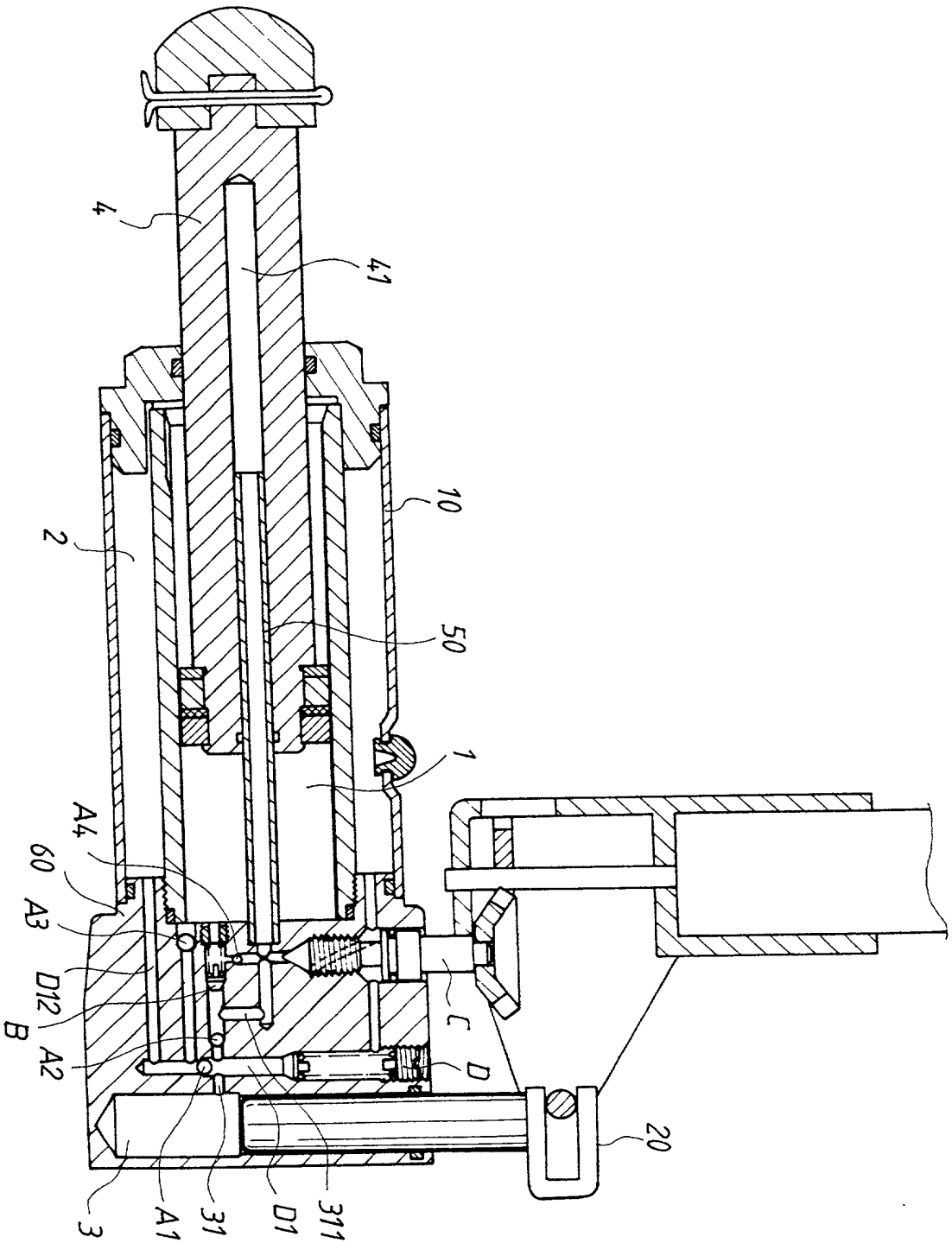


FIG. 3

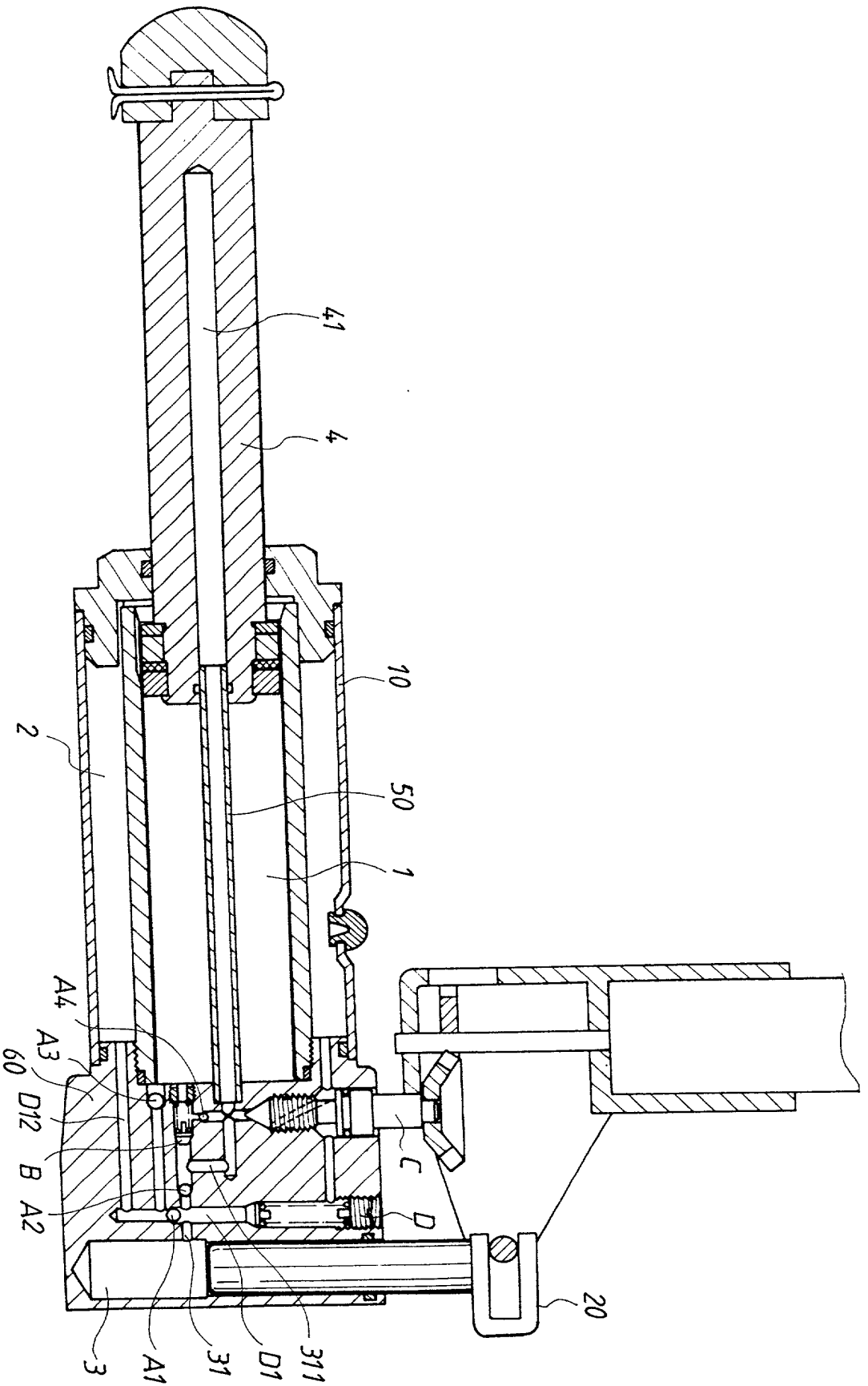


FIG. 4

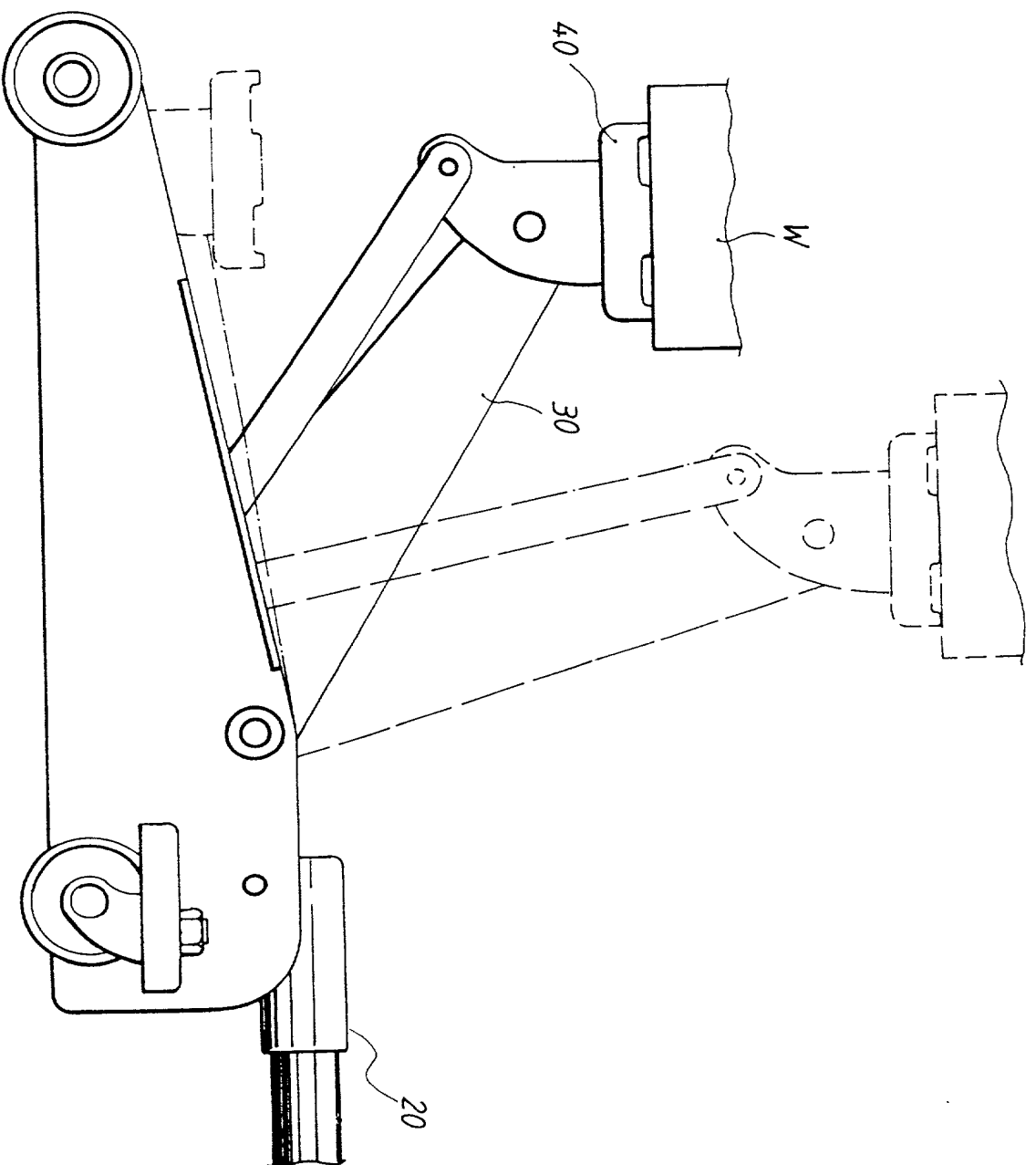


FIG. 5

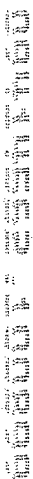


FIG. 6

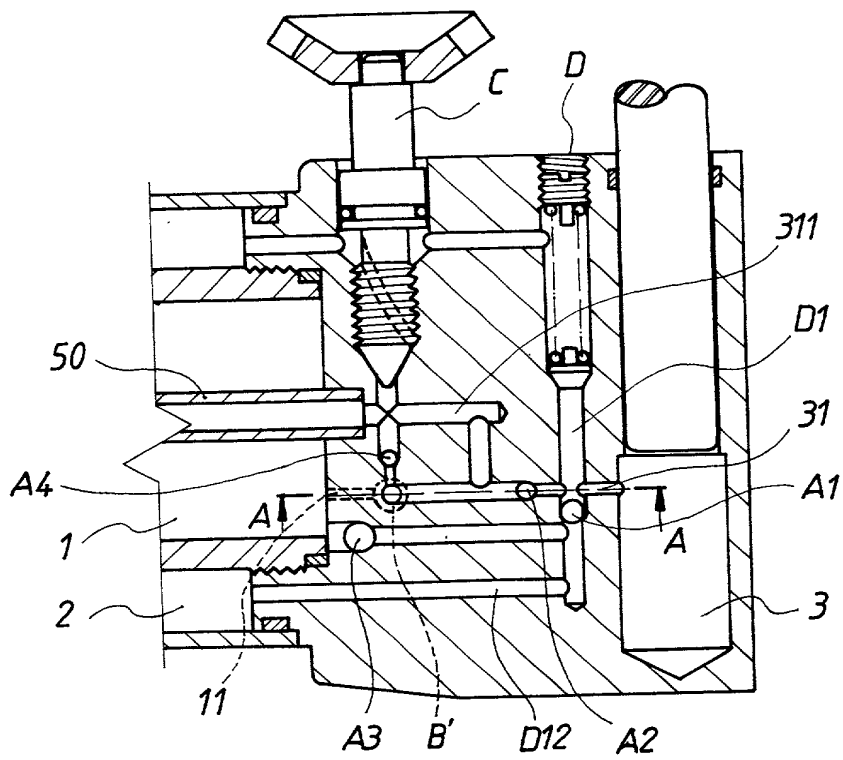


FIG. 7

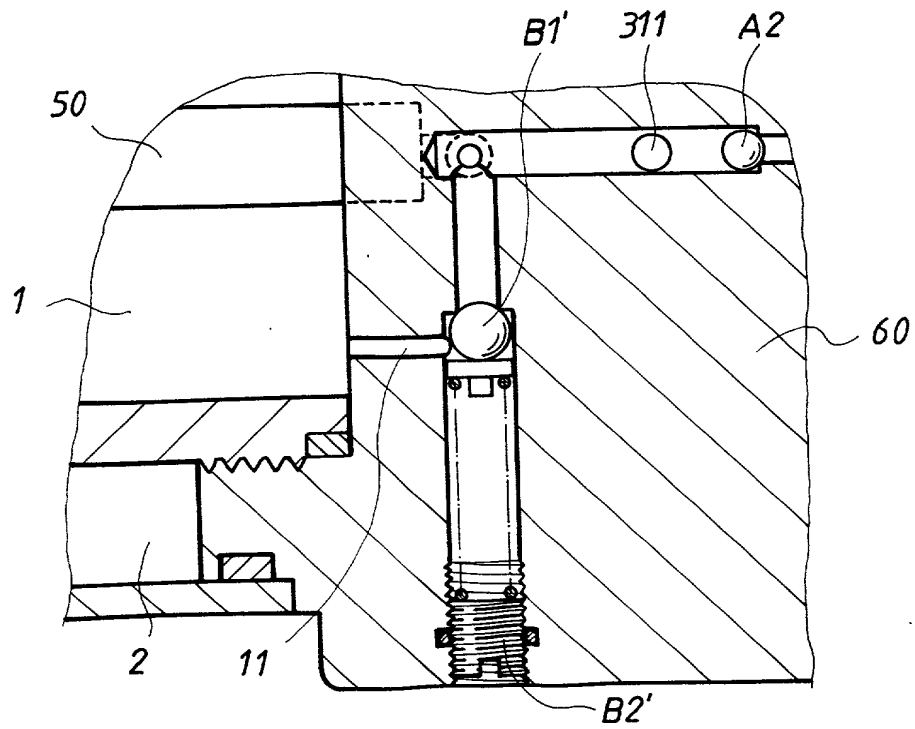


FIG. 8

DECLARATION FOR PATENT APPLICATION AND APPOINTMENT OF ATTORNEY

As a below named inventor, I hereby declare that my residence, post office address and citizenship are as stated below next to my name; I believe that I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention (Design, if applicable) entitled:

OIL CIRCUIT OF A JACK FOR RISING OBJECT TO PRESET POSITION RAPIDLY
the specification of which (check one):

☒ is attached hereto, or ☐ was filed on:
Number:

as U.S. Application Number or PCT International Application

and (if applicable) was amended on:

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment(s) referred to above. I acknowledge the duty to disclose information which is material to patentability as defined in *Title 37, Code of Federal Regulations*, §1.56. I hereby claim foreign priority benefits under *Title 35, United States Code* §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed.

PRIOR FOREIGN APPLICATION(S)			PRIORITY CLAIMED	
Number	Country	Day/Month/Year Filed	Yes	No

☐ Additional Priority Application(s) Listed on Following Page(s)

I HEREBY CLAIM THE BENEFIT UNDER TITLE 35 U.S. CODE §119(E) OF ANY U.S. PROVISIONAL APPLICATIONS LISTED BELOW.	
Application Number	Day/Month/Year Filed

☐ Additional Provisional Application(s) Listed on Following Page(s)

I hereby claim the benefit under *Title 35, United States Code*, §120 of any United States application(s) or PCT international application(s) designating The United States of America listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in that/those prior application(s) in the manner provided by the first paragraph of *Title 35, United States Code*, §112, I acknowledge the duty to disclose information which is material to patentability as defined in *Title 37, Code of Federal Regulations*, §1.56 which became available between the filing date of the prior application(s) and the national or PCT international filing date of this application:

Application Number	Filing Date	Status - Patented, Pending or Abandoned

☐ Additional US/PCT Priority Application(s) listed on Following Page(s)

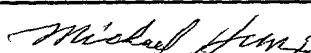
I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under *section 1001 of title 18 of the United States Code* and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

POWER OF ATTORNEY: I (We) hereby appoint as my (our) attorneys, with full powers of substitution and revocation, to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: J. Ernest Kenney, Reg. No. 19,179; Eugene Mar, Reg. No. 25,893; Richard E. Fichter, Reg. No. 26,382; Charles R. Wolfe, Jr., Reg. No. 28,680; Thomas J. Moore, Reg. No. 28,974; Bruce H. Troxell, Reg. No. 26,592; and

I(we) authorize my(our) attorneys to accept and follow instructions from Kingword International PTO regarding any matter related to the preparation, examination, grant and maintenance of this application, any continuation, continuation-in-part or divisional based thereon, and any patent resulting therefrom, until I(we) or my(our) assigns withdraw this authorization in writing.

Send correspondence to: **BACON & THOMAS**
625 Slaters Lane - 4th Floor
Alexandria, VA 22314

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(703) 683-0500

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RESIDENCE ADDRESS 9-16, Nan Kan Hsia, Nan Kan, Lu Chu Hsiang, Tao Yuan County, Taiwan, R.O.C.	POST OFFICE ADDRESS IS THE SAME AS RESIDENCE ADDRESS UNLESS OTHERWISE SHOWN BELOW
DATE Sep. 13, 1999	SIGNATURE 

☐ See following page(s) for additional joint inventors.